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AUTHOR Hardman, Thomas
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ABSTRACT

This competency-based module uses the Ocean County (New Jersey) Vocational-Technical Schools curriculum-infused model for infusing basic skills instruction into vocational education. The model demonstrates the relationship of vocational skills to communication, mathematics, and science. The document begins with a philosophy statement; preface; a table that explains the number of hours required for academic credit in various programs and the number of those hours that are devoted to basic skills and vocational activities; matrices that show in which courses specific basic skills are taught; a list of objectives; and an explanation of student activities. Most pages in the document are tables that describe the relationship of vocational skills to basic skills within the air conditioning, refrigeration, and heating program. These pages are organized by instructional unit and the topics within them. For each topic and associated task(s) are listed the theory and basic skills covered. Also listed are the expected student outcomes. The 11 instructional units included are: orientation; air conditioning, refrigeration, and heating program; safety; tools; tubing and pipe; soldering equipment; soldering; basic mechanical refrigeration; basic compression refrigeration; refrigerant system servicing; and electrical. (CML)

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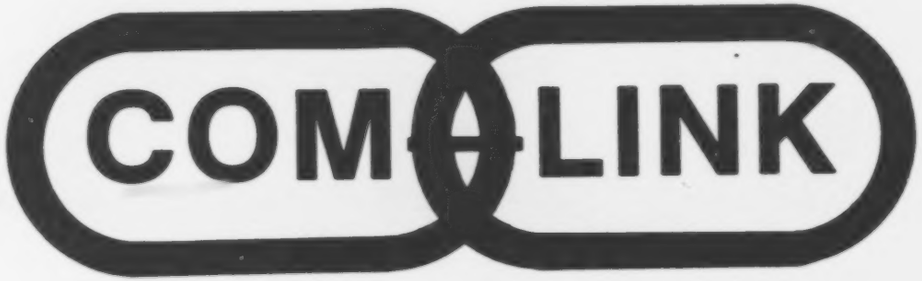
Competency Based Vocational Curricula



With Basic Skills And Academic Linkages

Dr. Frederick Felice, Project Director

Marilyn Halprin, Co Project Director (Project Coordinator)

In Cooperation With The

New Jersey State Department of Education

Division of Vocational Education

And

Ocean County Vocational-Technical School

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Ocean County Vocational-Technical School

Air Conditioning, Refrigeration and Heating

Prepared by

Thomas Hardman, Instructor

Project Director
Frederick Felice, Ed. D., Assistant Superintendent

Project Coordinator and Editor
Marilyn Halprin, Supervisor of Basic Studies

Assistant Editor and Typist
Laura Vassallo

Administrative Offices
137 Bey Lea Road
Toms River, New Jersey 08753

William G. Henry, Superintendent

In cooperation with
the New Jersey Department of Education
Division of Vocational Education, Trenton, New Jersey 08625

PHILOSOPHY OF EDUCATION

The Ocean County Vocational-Technical Education Program should consist of those courses, activities and experiences which are designed to prepare students for a successful entrance in a given field of work. The program should be based upon an analysis of the worker needs of the field of work, the opportunities and requirements for entrance, and the particular characteristics and needs of the students.

We believe that:

The school should educate and train the students to live effectively in our ever-changing world.

The school should provide, for each student, intensive training toward general and specific job objectives, and setting standards of performance in keeping with the requirements of that particular field of work.

All students should evidence the interest, aptitude, and ability to profit from the specialized instruction, and this should be a condition of entrance into or continuance in a given field of work.

Equal attention should be given in the school program to develop sound character, good citizenship, ability to think critically, and maintain good mental and physical health.

The school must be constantly striving to fulfill its ultimate purpose; that of serving the students and the community. The school should give careful consideration to the needs, interests, and capacities of the students and the educational and technical background, experience, training, and professional interest of the professional staff as they develop a working philosophy of education.

PREFACE

The curriculum format employed by this project is competency based and utilizes the Ocean County Vocational-Technical Schools' curriculum infused model for the teaching of basic skills as part of vocational education. The design demonstrates the relationship of vocationally related skills to communication, mathematics and science knowledge. Proficiences with regard to student outcomes cannot be achieved without mastery in related academic areas. All student outcome objectives are predicated upon entry level skills which reflect the dictates of the job marketplace and industry. In addition, basic skills matrices developed by the district are included. The totality of this package is designed to facilitate the vocational teaching process and to enchance the learning experiences of our students.

POTENTIAL OPPORTUNITY FOR AWARDING ACADEMIC CREDITS FOR STUDENTS AT OCEAN COUNTY VOCATIONAL-TECHNICAL SCHOOL

450 hours - 1 year course at O.C.V.T.S.
900 hours - 2 year course at O.C.V.T.S.
1000 hours - 2 year Beauty Culture course

120 hours per year needed for 5 credits
60 hours per year needed for 2½ credits

COURSE	TOTAL HOURS	HOURS SPENT ON COMMUNICATION SKILLS	HOURS SPENT ON COMPUTATION SKILLS	HOURS SPENT ON SCIENCE	TIME ON OCCUPATIONAL ACTIVITIES IN CLASS OR SHOP
AIR CONDITIONING, REFRIGERATION AND HEATING	900	140	120	120	520
AUTO BODY REPAIR	900	130	120	125	525
AUTOMOTIVE MECHANICS	900	150	120	120	510
AUTOMOTIVE AND DIESEL ENGINE REBUILDING	900	216	126	125	433
BEAUTY CULTURE I AND II	1000	240	120	130	515
BUILDING TRADES	900	135	120	130	515
BUSINESS RELATIONS - MEDIA/MODELING	450	200	60	40	150
CHILD CARE AIDE	900	240	120	122	418
COMMERCIAL ART AND PRINTING	900	120	215	75	580
COMMERCIAL BUILDING CONSTRUCTION (MASONRY)	900	130	125	130	515

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COURSE	TOTAL HOURS	HOURS SPENT ON COMMUNICATION SKILLS	HOURS SPENT ON COMPUTATION SKILLS	HOURS SPENT ON SCIENCE	TIME ON OCCUPATIONAL ACTIVITIES IN CLASS OR SHOP
COMMERCIAL PHOTOGRAPHY & TELEVISION PRODUCTION	900	150	125	80	545
CUSTOM CABINETMAKING	900	130	120	60	590
DENTAL ASSISTING	450	168	65	77	140
DESIGN DRAFTING	900	135	150	165	450
ELECTRICAL TRADES	900	106	120	124	550
FASHION MERCHANDISING	450	200	60	40	150
FOOD SERVICES	900	206	132	125	437
INDUSTRIAL AUTOMATION AND ELECTRONICS	900	129	140	132	499
INTERIOR DESIGN	900	210	130	120	440
LANDSCAPING AND GREENHOUSE TECHNOLOGY	900	125	125	175	475

POTENTIAL OPPORTUNITY FOR AWARDING ACADEMIC CREDITS FOR STUDENTS AT OCEAN COUNTY VOCATIONAL-TECHNICAL SCHOOL

450 hours - 1 year course at O.C.V.T.S.
900 hours - 2 year course at O.C.V.T.S.
1000 hours - 2 year Beauty Culture course

120 hours per year needed for 5 credits
60 hours per year needed for 2½ credits

COURSE	TOTAL HOURS	HOURS SPENT ON COMMUNICATION SKILLS	HOURS SPENT ON COMPUTATION SKILLS	HOURS SPENT ON SCIENCE	TIME ON OCCUPATIONAL ACTIVITIES IN CLASS OR SHOP
MARINE ENGINE AND BOAT SERVICES	900	164	120	125	491
MEDICAL OFFICE RECEPTIONIST/ASSISTANT	450	173	60	77	140
MEDICAL SKILLS AND RELATED HEALTH CAREERS	450	135	65	125	125
MEDICAL SKILLS (ADVANCED)	450	125	60	125	140
PLUMBING AND HEATING	900	140	120	120	520
RECREATIONAL VEHICLE MAINTENANCE AND REPAIR	900	125	130	60	585
T.V. AND COMPUTER REPAIR	900	125	150	175	450
WELDING	900	135	120	100	545

COMMUNICATION SKILLS

Listed below are all courses offered at the Ocean County Vocational-Technical School.
The asterisk indicates that the topic is studied in that curriculum.

COURSE	Functional Reading Skills	Vocabulary	Identifying Main Ideas	Meanings in Context	Inferences	Fact/Opinion Distinction	Signal Words	Parts of Text-book/Manual	Following Directions	Outlining and Note Taking	Interpretation of Maps, Graphs and Charts	Interpretation of Diagrams	Test Taking Skills	Expository Writing Skills	Problem Solving	Spelling	Oral Communications	Study Skills	Resume Writing	Job Application Skills
AIR CONDITIONING, REFRIGERATION AND HEATING	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
AUTO BODY REPAIR	*	*		*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
AUTOMOTIVE MECHANICS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
AUTOMOTIVE AND DIESEL ENGINE REBUILDING	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
BEAUTY CULTURE I AND II	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
BUILDING TRADES	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
BUSINESS RELATIONS - MEDIA/MODELING/TRAVEL	*	*	*	*	*	*	*	*	*	*	*	*	*	*		*	*	*	*	*
CHILD CARE AIDE	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
COMMERCIAL ART AND PRINTING CAREERS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
COMMERCIAL BUILDING CONSTRUCTION (MASONRY)	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
COMMERCIAL PHOTOGRAPHY AND TELEVISION PRODUCTION	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
CUSTOM CABINETMAKING	*	*		*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
DENTAL ASSISTING	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*

COMMUNICATION SKILLS - CONTINUED

COURSE	Functional Reading Skills	Vocabulary	Identifying Main Ideas	Meanings in Context	Inferences	Fact/Opinion Distinction	Signal Words	Parts of Text-book/Manual	Following Directions	Outlining and Note Taking	Interpretation of Maps, Graphs and Charts	Interpretation of Diagrams	Test Taking Skills	Expository Writing Skills	Problem Solving	Spelling	Oral Communications	Study Skills	Resume Writing	Job Application Skills
DESIGN DRAFTING	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
ELECTRICAL TRADES	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
FASHION MERCHANDISING	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
FOOD SERVICES	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
INDUSTRIAL AUTOMATION AND ELECTRONICS	*	*	*		*	*			*	*	*	*	*	*	*	*	*	*	*	*
INTERIOR DESIGN	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
LANDSCAPING AND GREENHOUSE TECHNOLOGY	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
MARINE ENGINE AND BOAT SERVICE	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MEDICAL OFFICE RECEPTIONIST/ASSISTANT	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
MEDICAL SKILLS AND RELATED HEALTH CAREERS	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
MEDICAL SKILLS (ADVANCED)	*	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*
PLUMBING AND HEATING	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
RECREATIONAL VEHICLE MAINTENANCE AND REPAIR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
T.V. AND COMPUTER REPAIR	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
WELDING	*	*	*			*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

MATHEMATICS SKILLS

Listed below are all courses offered at the Ocean County Vocational-Technical School. The asterisk indicates that the topic is studied in that curriculum.

COURSE	Whole Numbers	Common Fractions	Decimals	Percentages	Weights and Measurements	Ratio and Proportion	Powers and Roots	Formulas	Estimating	Geometry	Basic Trigonometric Functions	Graphs
AIR CONDITIONING, REFRIGERATION AND HEATING	*	*	*	*	*	*	*	*	*	*	*	*
AUTO BODY REPAIR	*	*	*	*	*	*	*	*	*	*		*
AUTOMOTIVE MECHANICS	*	*	*	*	*	*	*	*	*			*
AUTOMOTIVE AND DIESEL ENGINE REBUILDING	*	*	*	*	*	*	*	*	*	*		*
BEAUTY CULTURE I AND II	*	*	*	*	*	*	*	*	*	*	*	*
BUILDING TRADES	*	*	*	*	*	*	*	*	*	*	*	*
BUSINESS RELATIONS - MEDIA/MODELING/TRAVEL	*		*	*		*			*			*
CHILD CARE AIDE	*	*	*	*	*	*		*	*	*	*	*
COMMERCIAL ART AND PRINTING CAREERS	*	*	*	*	*	*		*	*	*		*
COMMERCIAL BUILDING CONSTRUCTION (MASONRY)	*	*	*	*	*	*	*	*	*	*	*	*
COMMERCIAL PHOTOGRAPHY AND TELEVISION PRODUCTION	*	*	*	*	*	*	*	*	*	*	*	*
CUSTOM CABINETMAKING	*	*	*	*	*	*	*	*	*	*	*	*
DENTAL ASSISTING	*	*	*	*	*	*		*	*			*

MATHEMATICS SKILLS - CONTINUED

COURSE	Whole Numbers	Common Fractions	Decimals	Percentages	Weights and Measurements	Ratio and Proportion	Powers and Roots	Formulas	Estimating	Geometry	Basic Trigonometric Functions	Graphs
DESIGN DRAFTING	*	*	*	*	*	*		*	*	*	*	*
ELECTRICAL TRADES	*	*	*	*	*	*	*	*	*	*	*	*
FASHION MERCHANDISING	*	*	*	*	*	*		*	*	*		*
FOOD SERVICES	*	*	*	*	*	*		*	*	*		*
INDUSTRIAL AUTOMATION AND ELECTRONICS	*	*	*	*	*	*		*	*	*	*	*
INTERIOR DESIGN	*	*	*	*	*	*		*	*	*		*
LANDSCAPING AND GREENHOUSE TECHNOLOGY	*	*	*	*	*	*		*	*	*	*	*
MARINE ENGINE AND BOAT SERVICE	*	*	*	*	*	*		*			*	*
MEDICAL OFFICE RECEPTIONIST/ASSISTANT	*	*	*	*	*	*	*	*	*	*		*
MEDICAL SKILLS AND RELATED HEALTH CAREERS	*	*	*	*	*	*		*	*	*	*	*
MEDICAL SKILLS (ADVANCED)	*	*	*	*	*	*		*	*	*	*	*
PLUMBING AND HEATING	*	*	*	*	*	*	*	*	*	*	*	*
RECREATIONAL VEHICLE MAINTENANCE AND REPAIR	*	*	*	*	*	*	*	*			*	*
T.V. AND COMPUTER REPAIR	*	*	*	*	*	*	*	*		*	*	*
WELDING	*	*	*	*	*	*		*	*	*	*	*

SCIENCE SKILLS

Listed below are all courses offered at the Ocean County Vocational-Technical School. Those listed as "Not Available" do not offer enough hours to qualify for credits in your high school. However, we have noted the skills covered. Those listed with an asterisk after the title are eligible. The asterisk indicates that the topic is studied in that curriculum.

	HUMAN ANATOMY						ASTRONOMY			CHEMISTRY			PHYSICS					ECOLOGY				
COURSE	Cellular Theory	Skeletal System	Muscles	System of Body	Diseases	Psychology	Solar System	Gravity	Weather	Matter	Chemical Reactions	Applied Chemistry	Light	Magnetism	Heat	Magnetism and Electricity	Nuclear Energy	Botany	Food Production	Fuels	Nutrition	Waste Disposal
AIR CONDITIONING, REFRIGERATION AND HEATING							*	*	*	*	*	*		*	*	*				*	*	
AUTO BODY REPAIR								*	*	*	*	*	*	*	*					*		*
AUTOMOTIVE MECHANICS								*		*	*	*	*	*	*	*				*		
AUTOMOTIVE DIESEL AND ENGINE REBUILDING								*		*	*	*		*	*	*	*			*		*
BEAUTY CULTURE I AND II	*	*	*	*	*	*				*	*	*	*		*	*					*	
BUILDING TRADES							*	*	*	*	*	*	*		*	*		*		*		
BUSINESS RELATIONS - MEDIA/MODELING/TRAVEL	N	* O	* T	* A	V	* A	I	L	A	B	L	E										
CHILD CARE AIDE	*	*	*	*	*	*			*		*	*		*	*			*	*		*	*
COMMERCIAL ART AND PRINTING CAREERS	N	O	T	A	V	A	I	* L	A	* B	* L	* E	*		*	*						*
COMMERCIAL BUILDING CONSTRUCTION (MASONRY)	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*		*		*	*	*
COMMERCIAL PHOTOGRAPHY AND TELEVISION PRODUCTION	N	O	T	A	V	* A	I	* L	A	* B	* L	* E	*		*	*						*
CUSTOM CABINETMAKING	* N	O	T	A	V	A	I	* L	A	* B	* L	* E			*			*				
DENTAL ASSISTING	*	*	*	*	*	*				*	*	*	*								*	*

SCIENCE SKILLS - CONTINUED

COURSE	HUMAN ANATOMY						ASTRONOMY			CHEMISTRY			PHYSICS					ECOLOGY				
	Cellular Theory	Skeletal System	Muscles	System of Body	Diseases	Psychology	Solar System	Gravity	Weather	Matter	Chemical Reactions	Applied Chemistry	Light	Magnetism	Heat	Magnetism and Electricity	Nuclear Energy	Botany	Food Production	Fuels	Nutrition	Waste Disposal
DESIGN DRAFTING							*	*	*	*		*	*		*	*	*			*		*
ELECTRICAL TRADES							*	*	*	*	*		*	*	*	*	*		*			
FASHION MERCHANDISING	*	*	*	*		*		*		*	*	*	*								*	
FOOD SERVICES					*	*		*	*		*	*	*		*				*		*	*
INDUSTRIAL AUTOMATION AND ELECTRONICS								*		*			*	*	*	*	*			*		
INTERIOR DESIGN		*	*			*	*	*	*	*	*	*	*		*	*						
LANDSCAPING AND GREENHOUSE TECHNOLOGY							*	*	*		*	*	*		*	*		*	*	*	*	*
MARINE ENGINE AND BOAT SERVICE								*	*	*	*	*	*	*	*	*		*		*		
MEDICAL OFFICE RECEPTIONIST/ASSISTANT	N	* O	* T	* A	* V	* A	I	L	A	B	* L	E										*
MEDICAL SKILLS AND RELATED HEALTH CAREERS	*	*	*	*	*	*		*		*	*					*			*		*	*
MEDICAL SKILLS (ADVANCED)	*	*	*	*	*	*		*		*	*					*			*		*	*
PLUMBING AND HEATING					*		*	*	*	*	*	*			*	*		*		*		*
RECREATIONAL VEHICLE MAINTENANCE AND REPAIR	N	O	T	A	V	A	I	* L	A	* B	* L	* E	*	*	*	*				*		*
T.V. AND COMPUTER REPAIR										*	*	*	*	*	*	*				*		
WELDING								*		*	*	*	*	*	*	*				*		

COURSE OBJECTIVES

1. To prepare student with entry level skills, abilities and knowledge for employment in the air conditioning, refrigeration and heating field.

2. To present 900 hours of instruction and practice in the air conditioning, refrigeration and heating trade in accordance with the course curriculum and skill profile outline.

3. To provide a detailed summary evaluation of the proficiency achieved by each student representing the most important content areas presented in the air conditioning, refrigeration and heating skill profile.

4. To help each student develop positive attitudes and ideals related to their occupation in the air conditioning, refrigeration and heating trade and understand their own capabilities and potential.

5. To instill in each student the need to plan for their professional growth through continuous learning in their chosen occupation.

STUDENT ACTIVITIES

All students enrolled in the Ocean County Vocational-Technical School are encouraged to join Vocational Industrial Clubs of America (VICA). Student activities are infused into each program. Each building has a student government and a student activities program separate from VICA. Additionally, students from each center and every class are encouraged to participate in the VICA Leadership and Job Demonstration Contests which begin in the centers and radiate throughout the district as Ocean County Vocational-Technical School inter school winners are chosen.

Student activities emphasize the basic precepts of VICA, as well as the basic tenets of democracy. Within the context, each of our programs teaches the dignity of work, high standards in trade ethics and safety, and a belief in the free enterprise economic system.

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UNIT: ORIENTATION - AIR CONDITIONING AND REFRIGERATION

TOPIC: STUDENT HANDBOOK

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
1. School rules and regulations	A. Student rights and responsibilities B. Student grievance procedures C. Student expectations D. School code of discipline E. Attendance and graduation policy F. Student transfers G. Grading system H. Accidents I. Bedside instruction J. Cooperative Industrial Education (C.I.E.) K. Driving policy L. Drug and alcohol policy M. Early dismissal procedures N. Lockers O. Driver permits P. School closing procedures Q. Smoking R. Student progress reports S. Telephones T. Thefts U. Tools and equipment	A. Note taking B. Filling out forms C. Oral communication D. Test taking skills E. Functional reading skills (Student Handbook)			A. The student will know what is expected of him/her for the school year in order to promote effective learning conditions Written test B. The student will know the standards to be met within the school and classroom Written test

UNIT: ORIENTATION - CONTINUED

TOPIC: STUDENT CONTRACT

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
II. Student contract	A. Attendance B. Request for make-up work C. Extra help with assignments or lessons D. Homework assignments E. Requirements for each marking period (practical assignment sheet) F. Notebooks, etc. G. Field trips H. Daily grading system I. Kits J. Lockers K. Student dress code L. Daily cleaning duties M. Comparison of private schools	A. Note taking B. Filling out forms C. Oral communication D. Test taking skills E. Functional reading skills (Student Contract)			A. The student will know what is expected of him/her for the school year in order to promote effective learning Written test B. The student will know the standards to be met within the school and classroom Written test

UNIT: ORIENTATION TO AIR CONDITIONING, REFRIGERATION AND HEATING PROGRAM

TOPIC: HISTORY AND DEVELOPMENT

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Cool B. Heat C. Filter D. Humidify E. Dehumidify F. Distribution of air G. Absorption refrigeration H. Compression refrigeration	A. Vocabulary B. Functional reading skills C. Handouts D. Note taking		A. Physics B. Energy	The student will be able to identify and define terms
II. Conditions of conditioned air	A. Cooled B. Heated C. Filtered D. Humidified E. Dehumidified F. Distributed	A. Functional reading skills B. Handouts C. Note taking		Physics	The student will be able to explain conditioned air
III. Important events in the development of air conditioning	A. 1834 Jacob Perkins B. 1918 Kelvinator C. 1930 Fluorocarbon D. 1908 Carrier E. 1934 Frigidaire F. 1935 Heat pump	A. Functional reading skills B. Note taking		Physics	The student will be able to explain the development of air conditioning and refrigeration
IV. Components of refrigeration systems	Explanation of system components 1. Compressor 2. Discharge line 3. Condenser 4. Liquid line 5. Metering device 6. Evaporator 7. Suction line	A. Functional reading skills B. Vocabulary C. Identifying main ideas		Physics	The student will be able to identify components of a refrigeration system

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Job titles within phases of air conditioning and refrigeration	A. Manufacturing 1. Designer 2. Engineer 3. Assembler 4. Shipping clerk 5. Manufacturer's representative 6. Service representative B. Wholesaleing 1. Salesperson 2. Counter person 3. Shipping clerk C. Retailing 1. Salesperson 2. Estimator 3. Service manager 4. Delivery person 5. Installer 6. Cooling mechanic 7. Heating mechanic 8. Refrigeration mechanic 9. Mechanical contractor 10. Energy consultant D. Building maintenance 1. Supervisor 2. Cooling mechanic 3. Heating mechanic	A. Vocabulary B. Note taking C. Oral communication			A. The student will be able to explain each job title B. The student will be able to explain level of training for each job
II. Past and future demands for workers with skills in air conditioning and refrigeration	A. Explain past need B. Explain future need with increased demand due to 1. Central heating and cooling in more new homes 2. Increase in living standards 3. Workers promotions, transfers, retirement, and death 4. Increased interest in energy management	A. Note taking B. Oral communication			The student will be able to explain past and future trends of the air conditioning and refrigeration industry

UNIT: SAFETY

TOPIC: GENERAL SAFETY

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Safety B. Accident C. First aid D. O.S.H.A.	A. Vocabulary B. Functional reading skills C. Handouts D. Note taking		A. Physics B. General science	The student will be able to pass a safety test with a score of 100% accuracy
II. Rules for personal safety	List and explain rules				
III. Rules for general shop safety	Explain handout on general shop safety				
IV. Characteristics of a clean and orderly shop	List and explain rules for a clean and orderly shop				
V. Classes of fires	List and explain five classes of fires				
VI. Components of fire triangle	A. Fuel B. Heat C. Oxygen				
VII. Types of fire extinguishers	Explain types of fire extinguishers used on 1. Water 2. Co_2 3. Dry chemical 4. Foam				
VIII. Steps to be followed in case of an accident	List and explain procedures				
IX. Steps for lifting heavy objects	List and explain rules for lifting and demonstrate				

UNIT: TOOLS

TOPIC: HAND TOOLS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Utilizing shop hand tools	A. Explain handout on hand tools B. List and explain safety rules C. Match hand tools with their use D. Demonstrate proper care of hand tools E. Terms and definitions 1. Hand tool 2. Specialized tool 3. Screwdriver 4. Wrench 5. Pliers 6. Hammer 7. Files 8. Swage 9. National fine 10. National coarse	A. Functional reading skills B. Vocabulary C. Note taking D. Handouts E. Identifying main ideas	A. Whole numbers B. Fractions C. Decimals D. Ratio E. Ruler graduations	A. Energy B. Force C. Physics	A. The student will be able to identify various hand tools B. The student will be able to explain correct use of hand tools C. The student will be able to name types of hand tools D. The student will be able to properly use tools E. The student will be able to repair hand tools

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
II. Utilizing power tools	A. Description of shop power tools 1. Electricity 2. Compressed air 3. Hydraulic pressure B. Safety precautions	A. Identifying main ideas B. Meanings in context C. Inferences D. Following directions	A. Weights and measurements B. Ratio	A. Energy B. Gravity C. Physics	A. The student will be able to identify various power tools B. The student will be able to describe the cautions of power tools C. The student will be able to explain the purpose of power tools D. The student will be able to perform with power tools

UNIT: TOOLS - CONTINUED

TOPIC: SPECIAL TOOLS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Charging B. Evaluating C. Conduit D. Thermal electric lead E. Hygrometer F. High vacuum G. Manometer H. Hermetic I. Combustion (Explain handout)	A. Functional reading skills B. Vocabulary C. Note taking D. Handouts E. Identifying main ideas	A. Whole numbers B. Rule graduations	A. Physics B. Energy C. Heat D. Force	The student will be able to identify and define terms
II. Utilizing special tools	A. Refrigeration gauge set B. Leak detectors C. Pullers D. Thermometers E. Hygrometers F. Vacuum pumps G. Vacuum indicators H. Capillary tube cleaners I. Charging cylinders J. Service valves K. Fin combs L. Combustion test kit M. Air meters N. Knock-out cutter O. Sheet metal tools P. Refrigeration ratchet	A. Handouts B. Note taking C. Oral communication	A. Rule graduations B. Whole numbers C. Fractions	A. Physics B. Heat C. Force D. Energy	A. The student will be able to identify various special tools B. The student will be able to describe the cautions of special tools C. The student will be able to perform with special tools D. The student will be able to care for special tools

UNIT: TOOLS - CONTINUED

TOPIC: MEASURING TOOLS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Measure B. Foot C. Rule D. Diameter E. Circumference	A. Handout B. Vocabulary C. Note taking	A. Whole numbers B. Rule graduation C. Fractions D. Decimals		The student will be able to identify and define terms
II. Utilize measuring instruments	Explain and demonstrate use of the following 1. Rules a. folding b. steel c. tape 2. Calipers	A. Handout B. Note taking C. Oral communication	A. Whole numbers B. Rule graduations C. Fractions D. Decimals E. Linear measurements		A. The student will be able to identify and explain use of various measuring instruments B. The student will be able to measure to the nearest eighth and sixteenth of an inch C. The student will be able to read inside and outside diameters D. The student will be able to properly care for measuring instruments

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Tube B. Nominal size tubing C. ACR tubing D. Annealing tubing E. Hard drawn F. Fare G. Sweat H. Compression fitting I. Quick connect	A. Handouts B. Vocabulary C. Note taking D. Functional reading skills			The student will be able to identify and define terms
II. Identify and utilize various types of tubing	Explain types of tubing and their application 1. Copper 2. Aluminum 3. Steel	A. Handouts B. Note taking C. Oral communication	A. Whole numbers B. Decimals		A. The student will be able to explain application of various tubings B. The student will be able to identify sizes of various tubings C. The student will be able to identify tubing by color codes
III. Identify and utilize tube fittings	Explain application of tube fittings 1. Flared fitting 2. Flare to pipe fittings 3. Compression fittings 4. Sweat fittings 5. Hose fittings 6. Quick connect fittings 7. Flexible refrigerant hose	A. Handouts B. Note taking C. Functional reading skills D. Oral communications	A. Whole numbers B. Fractions		The student will be able to identify and explain function of tube fittings

UNIT: TUBING AND PIPE - CONTINUED

TOPIC: TUBING OPERATIONS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Single flare B. Double flare C. Ream D. Offset E. Radius F. Wash-out G. Stretch	A. Handouts B. Note taking C. Functional reading skills D. Oral communication			The student will be able to identify and define terms
II. Utilize flaring blocks and yokes	Demonstrate and explain flaring blocks and yokes	A. Note taking B. Oral communication C. Handouts	A. Whole numbers B. Fractions	A. Friction B. Heat	A. The student will be able to identify types of flaring blocks B. The student will be able to construct a single and double flare C. The student will be able to properly care for flaring tools
III. Utilize swaging tool	Demonstrate and explain tools and proper method to construct a swage fitting	A. Note taking B. Handout C. Oral communication	A. Whole numbers B. Fractions	A. Friction B. Heat	The student will be able to construct a swage fitting
IV. Utilize tube bending equipment	Demonstrate and explain bending tools used to make various bends 1. Spring bender 2. Lever bender 3. Gear bender	A. Handouts B. Note taking C. Functional reading skills D. Oral communication	A. Whole numbers B. Fractions C. Angles		A. The student will be able to identify tube benders B. The student will be able to construct a tubing project using tube benders C. The student will be able to properly care for tube benders

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Regulator B. Flashback C. Flash back valve D. Air-acetylene torch E. Inner cone F. Neutral flame G. Soldering H. Silver brazing	A. Note taking B. Handouts C. Vocabulary			The student will be able to identify and define terms
II. Safety rules for using soldering and welding eqiupment	Explain safety rules for soldering and welding equipment	A. Note taking B. Oral communication C. Handouts		A. Heat B. Combustion C. Chemistry D. Physics	The student will be able to pass a safety test with a score of 100%

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Utilize an air-acetylene torch	A. Explain post-o-lite torch components 1. Torch handle 2. Regulator 3. Hose 4. Tips 5. Tanks 6. Striker 7. Cylinder wrench B. Explain turbo torch components 1. Torch handle 2. Regulator 3. Hose 4. Tips 5. Tanks 6. Striker 7. Cylinder wrench	A. Handout B. Note taking C. Oral communication	A. Weights and measurements B. Decimals	A. Chemistry B. Combustion C. Heat	A. The student will be able to identify and explain post-o-lite torch components B. The student will be able to identify and explain turbo torch components

UNIT: SOLDERING

TOPIC: SOFT SOLDERING

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Antimony B. Capillary action C. Soft solder D. Flux E. Filler metal F. Oxidize G. Eutectic solder H. Topped	A. Vocabulary B. Note taking C. Oral communication			The student will be able to identify and define terms
II. Utilize soft solders	A. Explain and demonstrate soft solders and their use 1. 50/50 2. 95/5 3. 97/3 B. Explain and demonstrate use of flux 1. Liquid 2. Paste	A. Note taking B. Handouts C. Oral communication	A. Weights B. Percent	A. Heat B. Physics C. Chemistry	A. The student will be able to identify soft solders and flux B. The student will be able to demonstrate the use of soft solders and flux on a tubing project C. The student will be able to explain safety rules for soft soldering

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Troy ounce B. Silver solder flux C. Silver solder D. Silver brazing E. Cadmium F. Alloy G. Sil-phos H. Phos-copper	A. Vocabulary B. Note taking C. Oral communication			The student will be able to identify and define terms
II. Utilize silver brazing alloys	A. Explain and demonstrate silver brazing alloys and their uses 1. 65% silver 2. Sil-phos 3. Phos-on B. Explain and demonstrate silver solder flux	A. Handouts B. Note taking C. Oral communication	A. Weights B. Percent	A. Heat B. Physics C. Chemistry	A. The student will be able to identify silver alloys and flux B. The student will be able to demonstrate the use of silver alloys on a tubing project C. The student will be able to explain safety rules for silver brazing

UNIT: BASIC MECHANICAL REFRIGERATION

TOPIC: COMPONENTS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. British thermal unit B. Latent heat C. Sensible heat D. Specific heat E. Super heat F. Fahrenheit G. Centigrade H. Thermodynamics I. Compressor J. Reciprocal compressor K. Rotary compressor L. Hermetic compressor M. Semi-hermetic compressor N. Open compressor O. Evaporator P. Shelf-type evaporator Q. Shell-type evaporator R. Fin-type evaporator S. Condenser T. Natural convection condenser U. Forced convection condenser V. Tube within a tube condenser W. Shell and tube condenser X. Evaporative condenser Y. Metering device Z. Capillary tube A.A. TEV B.B. AEV C.C. Refrigerant lines D.D. Refrigerant E.E. Vapor state F.F. Liquid state	A. Handouts B. Note taking skills C. Oral communications		A. Heat B. Physics	The student will be able to define basic mechanical refrigeration terms with their correct definitions

UNIT: BASIC COMPRESSION REFRIGERATION

TOPIC: BASIC MECHANICAL REFRIGERATION

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. British thermal unit B. Latent heat C. Sensible heat D. Specific heat E. Super heat F. Compressor G. Evaporator H. Condenser I. Metering device	A. Vocabulary B. Functional reading skills		A. Physics B. Energy	The student will be able to identify and define vocabulary words
II. Identify, explain and install compressors	Explain compressors 1. Reciprocal 2. Semi-hermetic 3. Open 4. Rotary	A. Functional reading skills B. Note taking skills C. Oral communications	A. Whole numbers B. Ratio C. Decimals	A. Physics B. Magnetism C. Ohms law	The student will be able to identify, explain, install and troubleshoot compressors
III. Identify, explain and install evaporators	Explain evaporators 1. Shelf-type 2. Shell-type 3. Fin-type	A. Note taking skills B. Oral communications	A. Whole numbers B. Ratio C. Fractions D. Volume	A. Physics B. Temp-press	The student will be able to identify, explain, install and troubleshoot evaporators
IV. Identify, explain and install condensers	Explain condensers 1. Air cooled a. natural b. forced air 2. Water cooled a. tube-within-tube b. shell and tube c. evaporative	A. Note taking skills B. Oral communications	A. Volume B. Whole numbers	A. Physics B. Temp-press	The student will be able to identify, explain, install and troubleshoot condensers
V. Identify, explain and install metering devices	Explain metering devices 1. Capillary tube 2. Thermostatic expansion valve 3. Automatic expansion valve	A. Note taking skills B. Oral communication C. Functional reading skills	A. Whole numbers B. Fractions C. Ratio D. Volume	A. Temp-press B. Physics	The student will be able to identify, explain, install and troubleshoot metering devices

UNIT: BASIC COMPRESSION REFRIGERATION - CONTINUED

TOPIC: REFRIGERANT SYSTEM ACCESSORIES

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Absorb B. Adsorb C. Desiccant D. Drier E. Receiver F. Access valve	A. Vocabulary B. Functional reading skills C. Note taking skills D. Oral communications		A. General science B. Physics	The student will be able to identify and define terms
II. Identify, explain and install accessories	Explain accessories 1. Liquid line filters 2. Suction line filters 3. Liquid indicators 4. Moisture indicators 5. Receivers 6. Service valves 7. Access fittings 8. Accumulator	A. Note taking skills B. Oral communications C. Functional reading skills	A. Whole numbers B. Fractions	A. Chemistry B. Physics	The student will be able to identify, explain, install and troubleshoot accessories

UNIT: REFRIGERANT SYSTEM SERVICING

TOPIC: PRESSURIZING AND LEAK TESTING

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Refrigerant B. Fluorocarbon C. Halogen D. Halide refrigerants E. Ambient F. Refrigerant oil	A. Vocabulary B. Functional reading skills C. Note taking skills D. Oral communications		A. Chemistry B. Temp-press	The student will be able to identify and define terms
II. Utilize refrigerants	A. Explain refrigerants - types 1. R-12 2. R-22 3. R-500 4. R-502 B. Explain leak detection methods C. Explain charging methods	A. Note taking skills B. Oral communications C. Handouts	A. Volume B. Weight C. Whole numbers	A. Temp-press B. Chemistry C. Physics	A. The student will be able to identify by color codes B. The student will be able to explain safety characteristics C. The student will be able to use a temp-press chart D. The student will be able to detect leaks E. The student will be able to charge a system

UNIT: ELECTRICAL

TOPIC: FUNDAMENTALS OF ELECTRICITY

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Capacitance B. Conductor C. Counter EMF D. Current E. Hertz F. Impedance G. Insulator H. Load I. Parallel circuit J. Resistance K. Series circuit L. Voltage M. Watt	A. Vocabulary B. Functional reading skills C. Note taking skills D. Oral communications		A. Physics B. Magnetism	The student will be able to identify and define terms
II. Utilize Ohms law	Establish a mathematical relationship between 1. Potential (voltage) 2. Current flow (amps) 3. Resistance (ohms)	A. Note taking skills B. Oral communications C. Handouts	A. Whole numbers B. Algebra C. Fractions	Physics	The student will be able to solve various problems by ohms law
III. Identify electrical symbols	Explain handout of electrical symbols used by the industry	A. Handout B. Oral communications C. Functional reading skills			The student will be able to locate symbols on wiring diagrams
IV. Utilize load and wire size chart	Explain load and wire size chart	A. Handout B. Oral communications C. Functional reading skills	A. Whole numbers B. Fractions	Physics	The student will be able to utilize the load and wire size chart correctly

UNIT: ELECTRICAL - CONTINUED

TOPIC: ELECTRICAL TEST INSTRUMENTS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Zero B. Range C. Calibrate D. Continuity E. Line voltage F. Probes G. Locked rotor amps H. Full load amps I. Infinity J. Bleed resistor K. Digital meter	A. Vocabulary B. Functional reading skills C. Note taking skills D. Oral communications			The student will be able to identify and define terms
II. Utilize safety rules pertaining to electrical test instruments	A. Stand on dry, non-conductive surfaces when testing live circuits B. Be sure power is off when checking a circuit with an ohmmeter C. Do not use meter leads with defective probes D. Do not have both hands in a high voltage cabinet E. Do not touch metal cabinet or other grounded material F. Wear eye protection G. Use fuse puller H. Do not work on live voltage circuits by yourself I. Do not assume that the power is off J. Discharge capacitors with resistor before testing	A. Note taking skills B. Oral communications C. Functional reading skills		A. Physics B. Chemistry C. General science	The student will be able to pass a test on safety rules with 100% accuracy

UNIT: ELECTRICAL - CONTINUED

TOPIC: ELECTRICAL TEST INSTRUMENTS - CONTINUED

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
III. Utilize test instruments	Explain the use of various test instruments 1. Voltmeter 2. Ohmmeter 3. Multimeter 4. Wattmeter 5. Ampmeter 6. Hermetic analyzer 7. Capacitor analyzer	A. Note taking skills B. Oral communications C. Handout D. Functional reading skills	A. Whole numbers B. Fractions C. Algebra D. Decimals	A. Physics B. General science C. Magnetism	The student will be able to utilize test instruments to 1. Check voltage 2. Check amperage 3. Check ohms 4. Check winding 5. Test capacitors 6. Check relays

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Single-phase B. Three-phase C. "Hot" conductor D. Grounded conductor E. Neutral F. Step-up transformer G. Step-down transformer H. Watt hour meter I. Primary voltage J. Leg K. Secondary voltage L. Equipment ground	A. Vocabulary B. Functional reading skills C. Note taking skills D. Oral communications	A. Whole numbers B. Ratio C. Decimals	A. Physics B. General science C. Magnetism	The student will be able to identify and define terms
II. Identify and explain current characteristics	Explanation of currents 1. Single phase 2. Three phase	A. Note taking skills B. Oral communications C. Functional reading skills	A. Whole numbers B. Ratio C. Decimals	A. Physics B. Magnetism C. General science	The student will be able to identify, test and explain single and three phase circuits
III. Identify and test transformers	Explanation of transformers 1. Step-up transformers 2. Step-down transformers	A. Note taking skills B. Oral communications C. Functional reading skills	A. Whole numbers B. Decimals	A. Physics B. General science	The student will be able to identify, explain and test transformers on various equipment

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Bimetal B. Heat anticipator C. Mercury bulb D. Low voltage E. Bellows F. Line voltage G. Thermostat H. Millivolt I. Inuar J. Subbase K. Cooling anticipator L. Integrated circuits M. Microelectronics	A. Note taking skills B. Oral communications C. Functional reading skills		Physics	The student will be able to identify and define terms
II. Utilize various types of thermostats	Explanation of thermostats 1. Low voltage 2. Millivolt 3. Line voltage	A. Note taking skills B. Oral communications C. Handouts D. Functional reading skills	A. Whole numbers B. Decimals	A. Physics B. General science	A. The student will be able to wire a mercury bulb thermostat B. The student will be able to determine heat anticipation C. The student will be able to install a wall thermostat

UNIT: ELECTRICAL - CONTINUED

TOPIC: RELAYS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Relay B. Time delay relay C. Contactor D. Potential relay E. Current relay F. Control relay G. Pilot duty H. Solid state relay	A. Note taking skills B. Oral communications C. Handouts D. Functional reading skills		Magnetism	The student will be able to identify and define terms
II. Utilize various motor starting relays	Explanation of relays 1. Potential 2. Current 3. Solid state 4. Contactor 5. Fan	A. Note taking skills B. Oral communication C. Handouts D. Functional reading skills	A. Whole numbers B. Decimals	Magnetism	A. The student will be able to wire 1. Current relay 2. Potential relay 3. Fan relay B. The student will be able to check relays with an 1. Ohmmeter 2. Voltmeter 3. Ampmeter

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Overcurrent protection B. Short circuit C. Circuit breaker D. Fuse E. Protection device F. Ground fault interrupter G. Pressure controls H. Oil failure controls I. Manual reset J. Automatic reset K. Pilot duty L. Line duty M. Lockout relay N. Transducer O. Sensor P. Protection module	A. Note taking skills B. Oral communications C. Functional reading skills		A. Physics B. Magnetism C. Energy	The student will be able to identify and define terms

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
II. Utilize overcurrent protection devices	Explanation of overcurrent protection devices 1. Blade type cartridge fuse 2. Ferrule type cartridge fuse 3. Type "S" plug fuse 4. Edison base plug fuse 5. Circuit breaker 6. Fusible link	A. Note taking skills B. Oral communications C. Functional reading skills	A. Whole numbers B. Percentage	A. Physics B. Energy (electrical) C. Ohms law	A. The student will be able to explain overcurrent protection devices B. The student will be able to test overcurrent protection devices C. The student will be able to install overcurrent protection devices
III. Utilize pressure activated protection devices	Explanation of pressure activated protection switches 1. Oil pressure switch 2. Refrigerant a. low pressure control b. high pressure control c. dual pressure control	A. Note taking skills B. Oral communications C. Training boards D. Handouts	A. Whole numbers B. Temp-press ratio	A. Physics B. Temp-press	The student will be able to install, adjust and troubleshoot pressure controls
IV. Utilize electrical system protection devices	Explanation of electrical system protection devices 1. Bimetal overload 2. Magnetic overload 3. Thermal overload 4. Lockout relay 5. Solid-state protector	A. Note taking skills B. Oral communications C. Training boards D. Handouts	A. Whole numbers B. Decimals	A. Physics B. Energy (electrical)	A. The student will be able to explain and install 1. Overload 2. Lockout relay 3. Solid-state motor protector B. The student will be able to troubleshoot 1. Overload 2. Lockout relay 3. Solid-state motor protector

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Microfarad B. Voltage rating C. Run capacitor D. Start capacitor E. Bleed resistor F. Internally fused G. Dual run capacitor H. Hard start kit	A. Note taking skills B. Oral communications C. Functional reading skills	A. Whole numbers B. Decimals	A. Physics B. Energy (electrical)	The student will be able to identify and define terms
II. Utilize capacitors	Explanation of capacitors 1. Run capacitors 2. Start capacitors	A. Note taking skills B. Oral communications C. Handouts D. Training boards	A. Whole numbers B. Decimals C. Algebra	A. Physics B. Energy (electrical)	A. The student will be able to draw 1. Wiring of capacitors with a current relay 2. Wiring of capacitors with a potential relay 3. Wiring of capacitor with a (C.S.R.) motor B. The student will be able to wire a capacitor 1. With a current relay 2. With a potential relay 3. With a (P.S.C.) compressor motor 4. With a (C.S.R.) motor

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Poles B. Stator C. Rotor D. Induction motor C. Repulsion motor F. Deflection G. NEMA H. Resilient mount I. Rigid mount J. Shunt	A. Note taking skills B. Oral communications C. Functional reading skills D. Handouts		A. Physics B. Energy (electrical) C. Magnetism	The student will be able to identify and define terms
II. Utilize motors	Explanation of motors 1. Split-phase motors 2. Shaded-pole motors 3. Capacitor motors 4. Three-phase motors	A. Note taking skills B. Oral communications C. Functional reading skills D. Handouts E. Training units	A. Whole numbers B. Decimals C. Fractions	A. Physics B. Ohms law C. Energy (electrical)	A. The student will be able to adjust belt tension B. The student will be able to wire 1. Split-phase motors 2. Shaded-pole motors 3. Capacitor motors 4. Three-phase motors

UNIT: ELECTRICAL - CONTINUED

TOPIC: WIRING DIAGRAMS

Task	Theory	Communication Skills	Mathematics Skills	Science Knowledge	Student Outcome
I. Terms and definitions	A. Wiring diagrams B. Pictorial C. Ladder schematic D. Legend E. Symbol	A. Note taking skills B. Oral communications C. Functional reading skills			The student will be able to identify and define terms
II. Utilize wiring diagrams	Explanation of wiring diagrams 1. Pictorial 2. Ladder schematic	A. Note taking skills B. Oral communications C. Handouts			A. The student will be able to draw basic wiring diagrams 1. A/C only 2. Heat only 3. Heat-cool 4. Oil heat B. The student will be able to wire 1. A/C only 2. Heat only 3. Heat-cool 4. Oil heat